

WHAT IS CLAIMED IS:

1. An apparatus including self-resonant radio frequency (RF) circuitry within a multilayered low temperature co-fired ceramic (LTCC) substrate, comprising:

a first ceramic tape layer with a plurality of interface electrodes;

a second ceramic tape layer with a plurality of circuit electrodes for at least an RF integrated circuit;

a plurality of intermediate ceramic tape layers positioned between said first and second ceramic tape layers with a plurality of electrode patterns; and

a plurality of conductive paths, each of which includes one or more conductive vias and one or more portions of selected ones of said plurality of electrode patterns, mutually coupling selected ones of said pluralities of interface electrodes, circuit electrodes and electrode patterns;

wherein

one of said first, second and plurality of intermediate ceramic tape layers includes

an electrode pattern with at least a portion coupled to at least one of said plurality of interface electrodes by a first one of said plurality of conductive paths,

a dielectric paste deposited upon said electrode pattern portion, and

a conductive plate disposed on at least a portion of said dielectric paste, thereby forming, together with said dielectric paste and electrode pattern portion, a capacitance,

said conductive plate is coupled to at least one of said plurality of circuit electrodes by a second one of said plurality of conductive paths, and

said first and second conductive paths together form an inductance such that said inductance and said capacitance together form a series resonant impedance at a predetermined frequency of resonance.

2. The apparatus of claim 1, wherein:
said one of said first, second and plurality of intermediate ceramic tape layers has a first dielectric constant associated therewith;
said dielectric paste has a second dielectric constant associated therewith; and
said second dielectric constant is greater than said first dielectric constant.
3. The apparatus of claim 1, wherein said plurality of interface electrodes includes one or more ground reference interface electrodes.
4. The apparatus of claim 3, wherein said plurality of circuit electrodes includes one or more power supply electrodes.
5. The apparatus of claim 1, wherein said plurality of circuit electrodes includes one or more power supply electrodes.
6. The apparatus of claim 5, wherein said electrode pattern portion comprises at least a portion of an electrode pattern forming a RF ground plane.
7. The apparatus of claim 1, wherein said electrode pattern portion comprises at least a portion of an electrode pattern forming a RF ground plane.

8. An apparatus including self-resonant radio frequency (RF) circuitry within a multilayered low temperature co-fired ceramic (LTCC) substrate, comprising:

- a first ceramic tape layer with a plurality of interface electrodes;
- a second ceramic tape layer with a plurality of circuit electrodes for at least an RF integrated circuit;
- a plurality of intermediate ceramic tape layers positioned between said first and second ceramic tape layers with a plurality of electrode patterns; and
- a plurality of conductive paths, each of which includes one or more conductive vias and one or more portions of selected ones of said plurality of electrode patterns, mutually coupling selected ones of said pluralities of interface electrodes, circuit electrodes and electrode patterns;

wherein

one of said first, second and plurality of intermediate ceramic tape layers includes

- an electrode pattern with at least a portion coupled to at least one of said plurality of circuit electrodes by a first one of said plurality of conductive paths,
- a dielectric paste deposited upon said electrode pattern portion, and
- a conductive plate disposed on at least a portion of said dielectric paste, thereby forming, together with said dielectric paste and electrode pattern portion, a capacitance,

said conductive plate is coupled to at least one of said plurality of interface electrodes by a second one of said plurality of conductive paths, and

said first and second conductive paths together form an inductance such that said inductance and said capacitance together form a series resonant impedance at a predetermined frequency of resonance.

9. The apparatus of claim 8, wherein:
said one of said first, second and plurality of intermediate ceramic tape layers has a first dielectric constant associated therewith;
said dielectric paste has a second dielectric constant associated therewith; and
said second dielectric constant is greater than said first dielectric constant.
10. The apparatus of claim 8, wherein said plurality of interface electrodes includes one or more ground reference interface electrodes.
11. The apparatus of claim 10, wherein said plurality of circuit electrodes includes one or more power supply electrodes.
12. The apparatus of claim 8, wherein said plurality of circuit electrodes includes one or more power supply electrodes.
13. The apparatus of claim 12, wherein said electrode pattern portion comprises at least a portion of an electrode pattern forming a RF ground plane.
14. The apparatus of claim 8, wherein said electrode pattern portion comprises at least a portion of an electrode pattern forming a RF ground plane.

15. An apparatus including self-resonant radio frequency (RF) circuitry within a multilayered low temperature co-fired ceramic (LTCC) substrate, comprising:

a first ceramic tape layer with a plurality of interface electrodes;

a second ceramic tape layer with a plurality of circuit electrodes for at least an RF integrated circuit;

a plurality of intermediate ceramic tape layers positioned between said first and second ceramic tape layers with a plurality of electrode patterns; and

a plurality of conductive paths, each of which includes one or more conductive vias and one or more portions of selected ones of said plurality of electrode patterns, coupling among selected ones of said pluralities of interface electrodes, circuit electrodes and electrode patterns;

wherein

one of said first, second and plurality of intermediate ceramic tape layers includes

an electrode pattern with at least a portion coupled by a first one of said plurality of conductive paths to one or more of said selected ones of said pluralities of interface electrodes, circuit electrodes and electrode patterns,

a dielectric paste deposited upon said electrode pattern portion, and

a conductive plate disposed on at least a portion of said dielectric paste, thereby forming, together with said dielectric paste and electrode pattern portion, a capacitance,

said conductive plate is coupled by a second one of said plurality of conductive paths to a different one or more of said selected ones of said pluralities of interface electrodes, circuit electrodes and electrode patterns, and

said first and second conductive paths together form an inductance such that said inductance and said capacitance together form a series resonant impedance at a predetermined frequency of resonance.

16. The apparatus of claim 15, wherein:
said one of said first, second and plurality of intermediate ceramic tape layers has a first dielectric constant associated therewith;
said dielectric paste has a second dielectric constant associated therewith; and
said second dielectric constant is greater than said first dielectric constant.
17. The apparatus of claim 15, wherein at least a portion of one of said plurality of electrode patterns comprises a RF ground plane.
18. The apparatus of claim 17, wherein one of said first and second conductive paths is coupled to said RF ground plane.